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Gene Section
Mini Review

MSI2 (musashi homolog 2 (drosophila))

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Identity

Other names: MSI2H; FLJ36569; MGC3245

HGNC (Hugo): MSI2

Location: 17q23.2

DNA/RNA

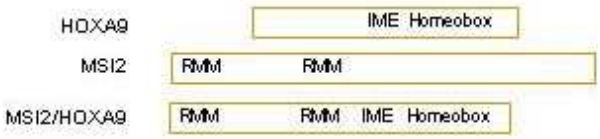
Description

The gene spans 424 kb.on plus strand; at least 15 exons.

Transcription

Alternate splicing; at least 3 transcripts, of which are transcripts of 1,6 and 2,1 kb.

Protein



Description

328 amino acids, 35 kDa, and 251 amino acidsThe Musashi (Msi) family genes possess 2 ribonucleoprotein (RNP or ribonucleo particle)-type RNA recognition motifs (RRMs) in the N-term; each RRM comprises 2 highly conserved sequences called RNP1 and RNP2. Heterogeneous nuclear ribonucleoparticle (hnRNP) proteins are nuclear proteins implicated in hnRNA (pre-mRNA transcript) processing; Msi2 and Msi1 have similar RNA-binding specificity.

Expression

Ubiquitously expressed in various tissues; expressed predominently in precursor cells in the ventricular zone and subventricular zone of the central nervous system (CNS); in CNS stem cells during embryogenesis; in the postnatal and adult CNS, the expression of Msi2 and Msi1 disappear in most post mitotic or migrating cells, but is found in cells of the astrocyte lineage; coexpressed with Msi1.

Function

RNA-binding protein. Some RNA-binding proteins are neural-specific. The development of neural cells from precursors may be partly regulated at the post-transcriptional level by mRNA stabilization or translational control in the cytoplasm. Msi2 may have a unique role in CNS stem cells through life.

Homology

MSI1.

Mutations

Germinal

Defective MSI2 might play a role in certain dementia (although this chromosomal region also contains several loci known to be involved in neurological disorders (NF1 and others).

Somatic

See below.

Implicated in

Chronic myelogenous leukemia (CML) in accelerated phase (AP-CML) with either a t(7;17)(p15;q23) and a HOXA9 / MSI2 hybrid gene, or a t(7;17)(q32-34;q23) and a ? possible gene of the plexin family/MSI2 hybrid gene

Hybrid/Mutated gene

5' MSI2 - 3' HOXA9 in the t(7;17)(p15;q23).

Oncogenesis

In the t(7;17)(p15;q23) the fusion protein contains, from N-term to C-term, the 2 RNA recognition motifs of MSI2 and the the IME and the homeobox domain of HOXA9.

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